FIG. 1

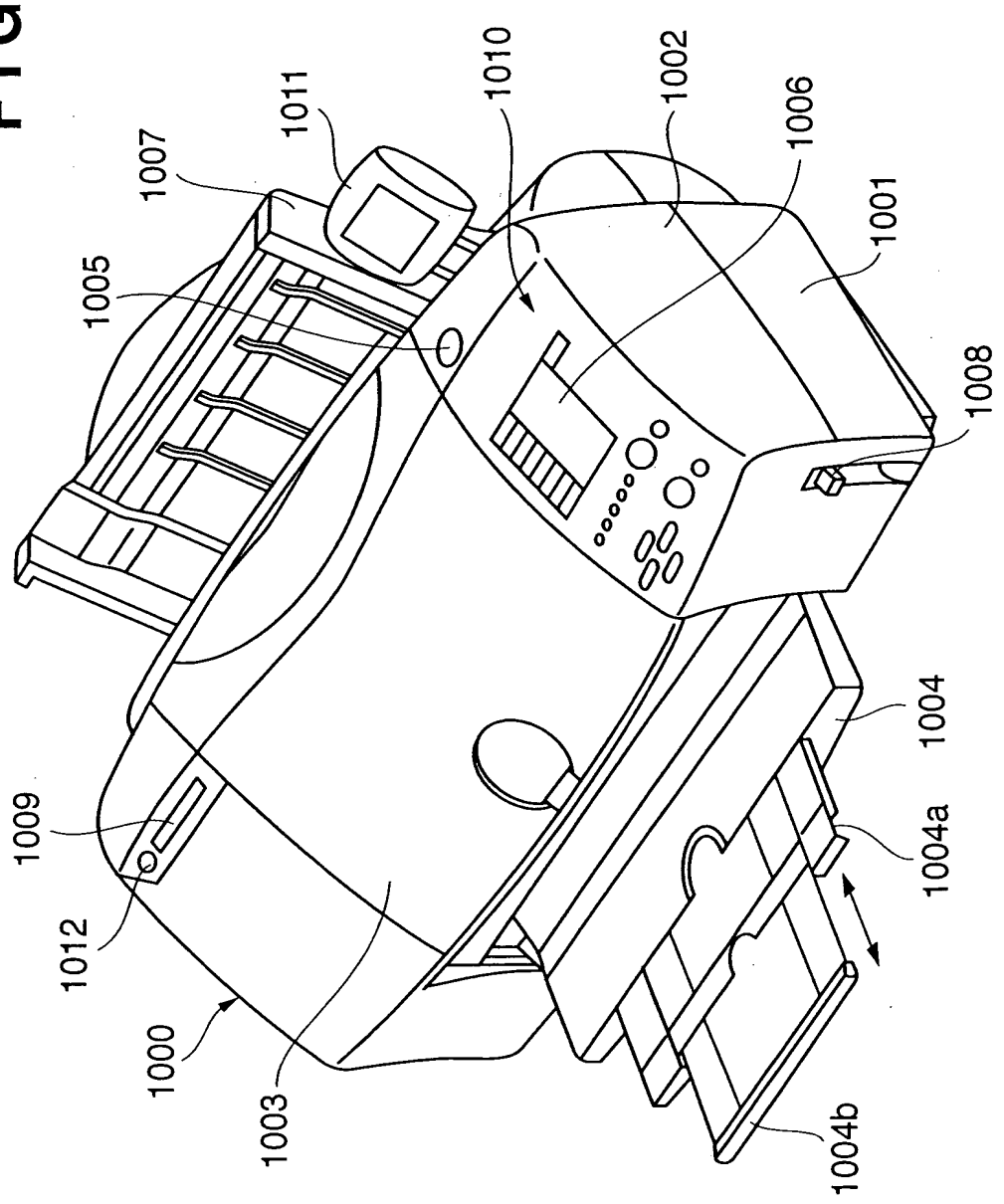

1007
1011
1010
1002
1006
1005
1001
1008
1009
1004
1004a
1012
1000
1003
1004b

FIG. 2

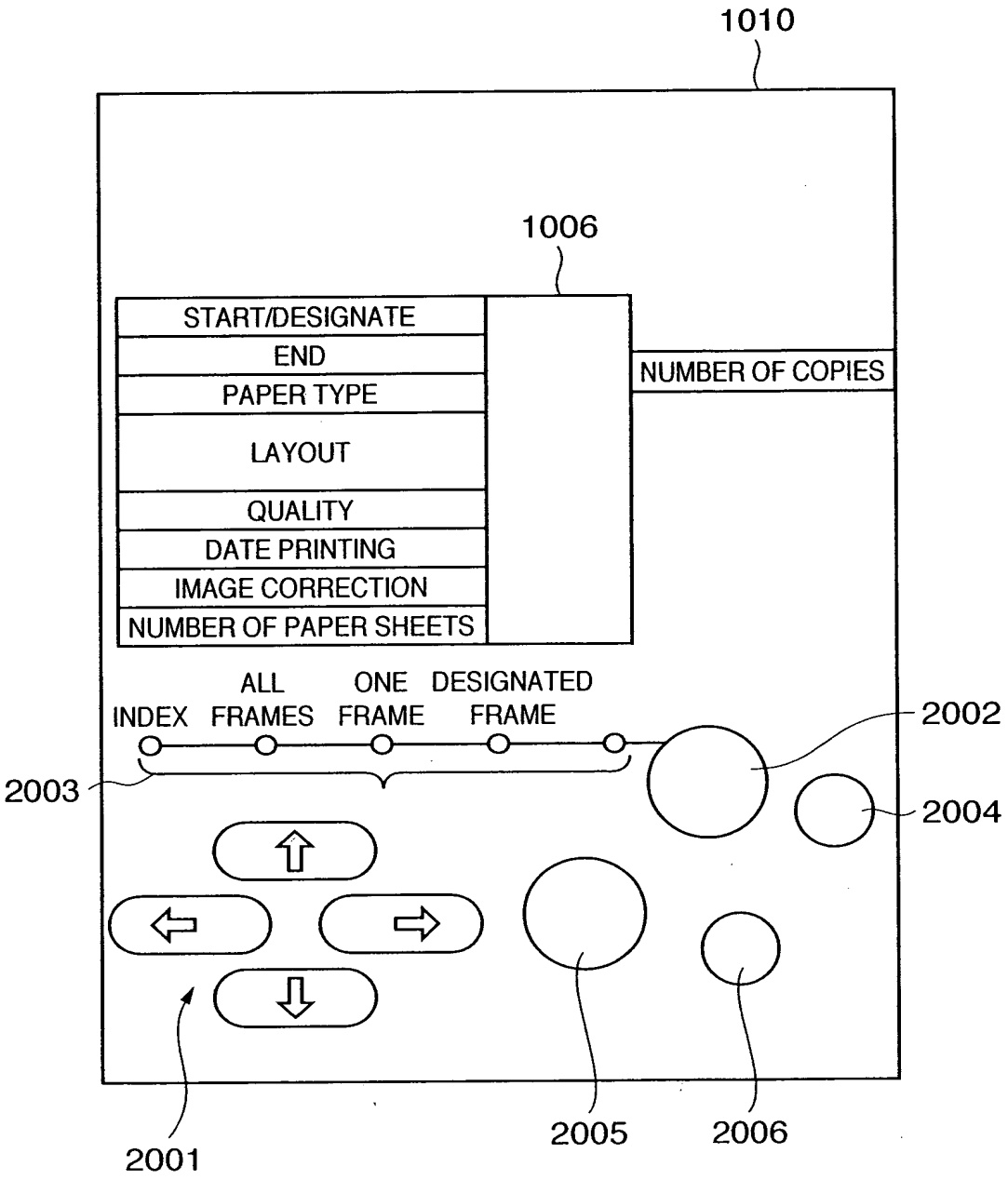

1010
1006
START/DESIGNATE
END
PAPER TYPE
LAYOUT
QUALITY
DATE PRINTING
IMAGE CORRECTION
NUMBER OF PAPER SHEETS
NUMBER OF COPIES
INDEX
ALL FRAMES
ONE FRAME
DESIGNATED FRAME
2002
2003
2004
2001
2005
2006

FIG. 3

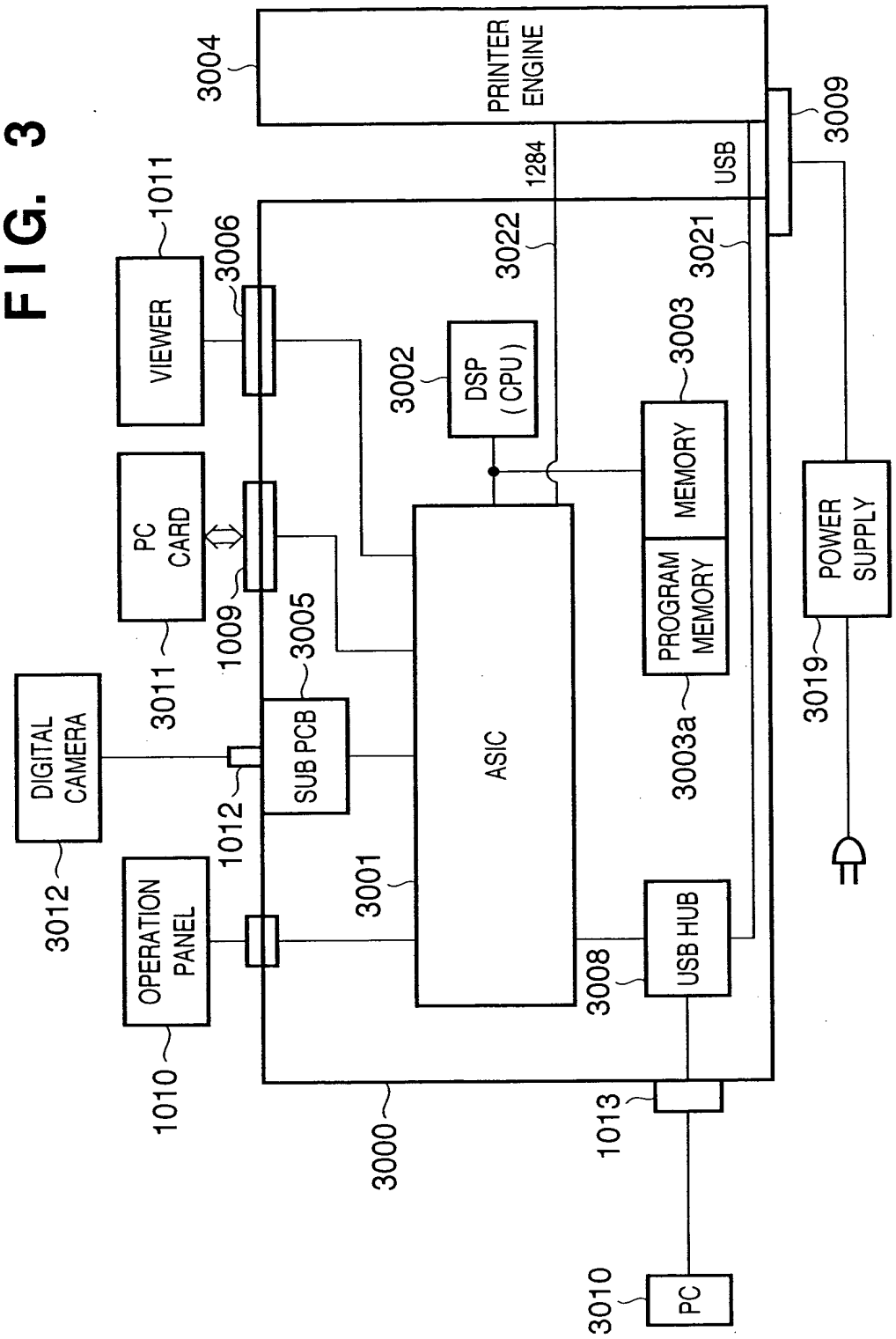

3004
PRINTER ENGINE
3009
1284
USB
1011
VIEWER
3006
3022
3021
3002
DSP (CPU)
3003
MEMORY
PC CARD
1009
3005
PROGRAM MEMORY
POWER SUPPLY
3011
DIGITAL CAMERA
SUB PCB
ASIC
3003a
3019
3012
1012
3001
OPERATION PANEL
USB HUB
3008
1010
3000
1013
3010
PC

FIG. 4

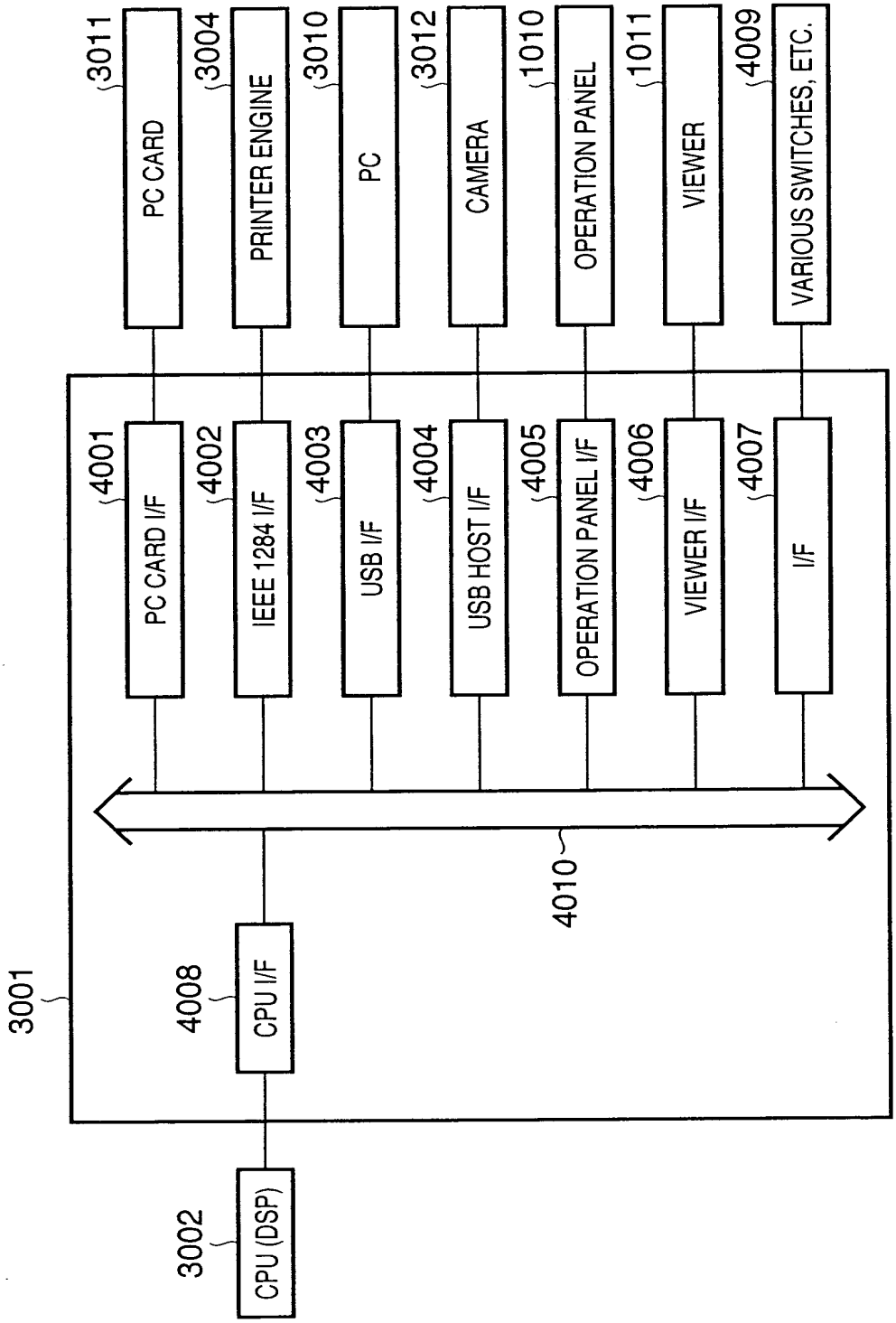

3011
PC CARD
3004
PRINTER ENGINE
3010
PC
3012
CAMERA
1010
OPERATION PANEL
1011
VIEWER
4009
VARIOUS SWITCHES, ETC.
4001
PC CARD I/F
4002
IEEE 1284 I/F
4003
USB I/F
4004
USB HOST I/F
4005
OPERATION PANEL I/F
4006
VIEWER I/F
4007
I/F
4010
3001
4008
CPU I/F
3002
CPU (DSP)

FIG. 5

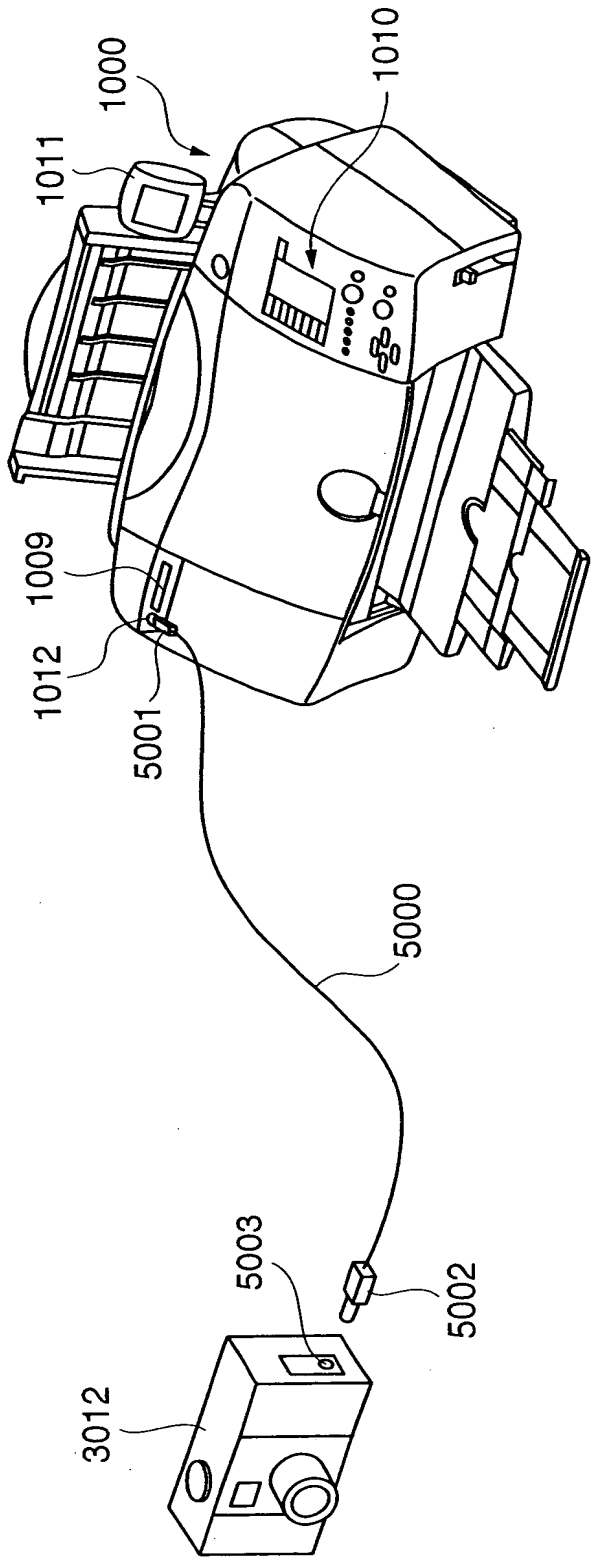


FIG. 6

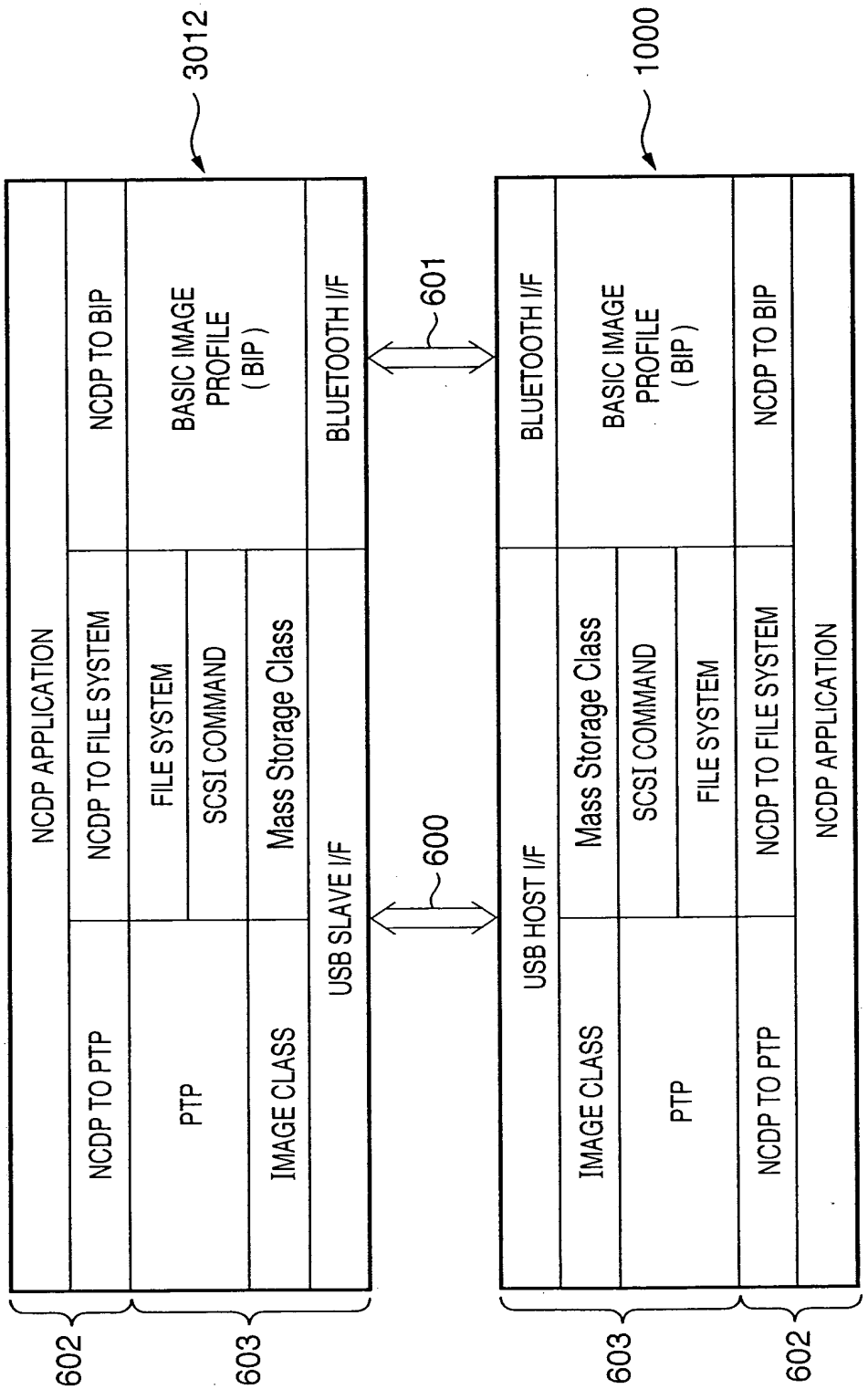

DSC
NCDP APPLICATION
NCDP TO PTP
NCDP TO FILE SYSTEM
NCDP TO BIP
PTP
FILE SYSTEM
SCSI COMMAND
BASIC IMAGE PROFILE (BIP)
IMAGE CLASS
Mass Storage Class
USB SLAVE I/F
BLUETOOTH I/F
3012
600
601
1000
USB HOST I/F
BLUETOOTH I/F
IMAGE CLASS
Mass Storage Class
SCSI COMMAND
BASIC IMAGE PROFILE (BIP)
PTP
FILE SYSTEM
NCDP TO PTP
NCDP TO FILE SYSTEM
NCDP TO BIP
NCDP APPLICATION
PD PRINTER
602
603
603
602

FIG. 7

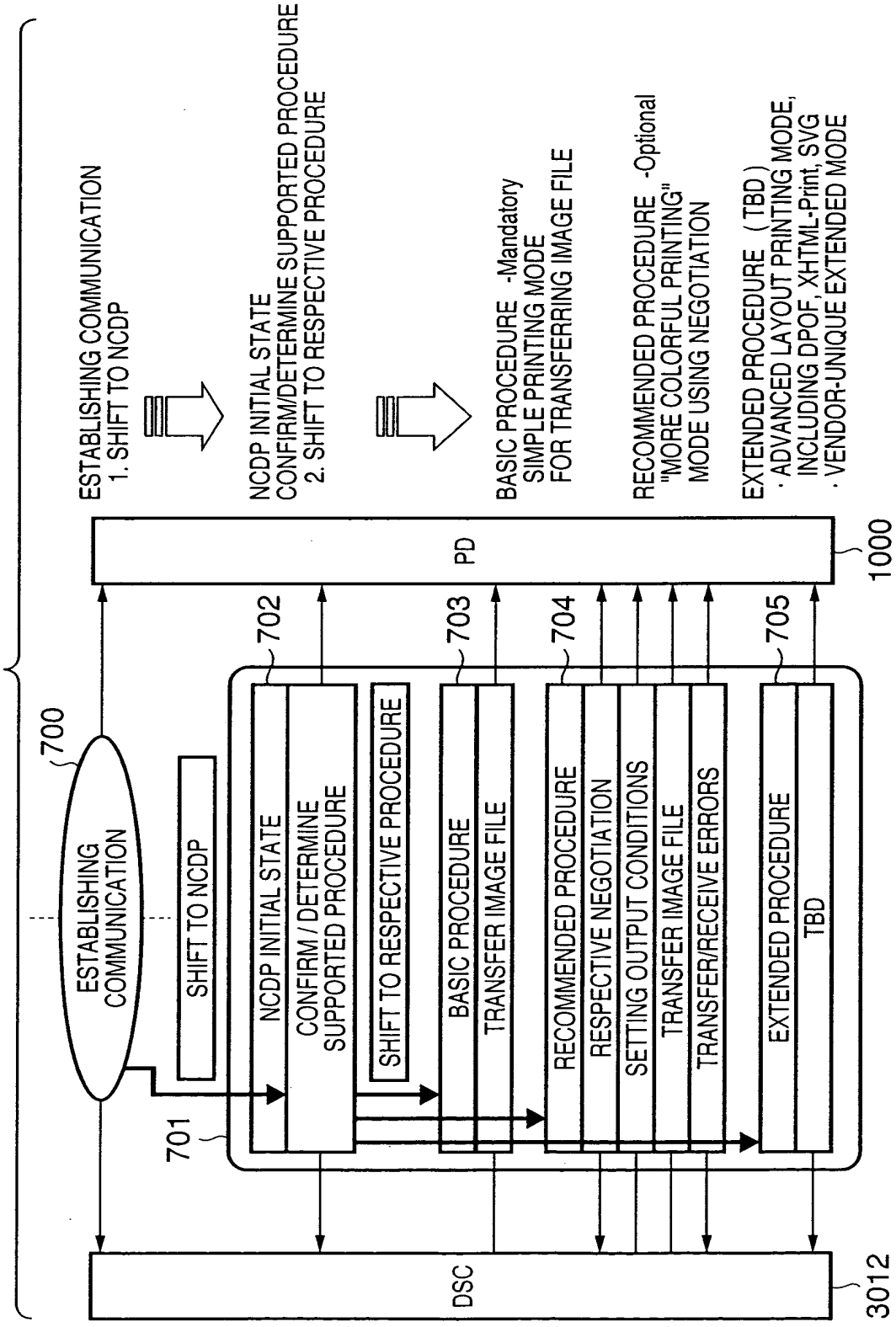

ESTABLISHING COMMUNICATION
1. SHIFT TO NCDP
NCDP INITIAL STATE
CONFIRM/DETERMINE SUPPORTED PROCEDURE
2. SHIFT TO RESPECTIVE PROCEDURE
BASIC PROCEDURE -Mandatory
SIMPLE PRINTING MODE
FOR TRANSFERRING IMAGE FILE
RECOMMENDED PROCEDURE -Optional
"MORE COLORFUL PRINTING"
MODE USING NEGOTIATION
EXTENDED PROCEDURE (TBD)
· ADVANCED LAYOUT PRINTING MODE, INCLUDING DPOF, XHTML-Print, SVG
· VENDOR-UNIQUE EXTENDED MODE
700
ESTABLISHING COMMUNICATION
SHIFT TO NCDP
701
NCDP INITIAL STATE
CONFIRM / DETERMINE SUPPORTED PROCEDURE
SHIFT TO RESPECTIVE PROCEDURE
BASIC PROCEDURE
TRANSFER IMAGE FILE
RECOMMENDED PROCEDURE
RESPECTIVE NEGOTIATION
SETTING OUTPUT CONDITIONS
TRANSFER IMAGE FILE
TRANSFER/RECEIVE ERRORS
EXTENDED PROCEDURE
TBD
702
703
704
705
PD
1000
DSC
3012

FIG. 8

COMMAND SENDER	FUNCTION NAME	MODE			FUNCTION
		BASIC	RECOMMENDED	EXTENDED	
PRINTER	NCDPStart	○	○	○	SHIFT TO NCDP
	ProcedureStart	○	○	○	SHIFT TO RESPECTIVE MODES (BASIC, RECOMMENDED, EXTENDED)
	NCDPEnd	○	○	○	TERMINATE NCDP
	Capability		○		NOTIFY PRINTER FUNCTION (WHEN NEGOTIATION IS NECESSARY)
	GetImage	○	○		ACQUIRE IMAGE, e.g., JPEG, FROM DSC
	StatusSend		○		NOTIFY ERROR STATE (WARNING OR FATAL ERROR)
	PageStart		○		NOTIFY PRINT START (WHEN FEEDING IN PAPER UNIT)
	PageEnd		○		NOTIFY PRINT END (WHEN DISCHARGING IN PAPER UNIT)
	JobEnd		○		NOTIFY END OF PRINT JOB
DSC	JobStart	○	○		COMMAND PRINTING
	JobAbort		○		COMMAND PRINTING CANCELLATION
	JobContinue		○		COMMAND PRINTING RESUME

FIG. 9

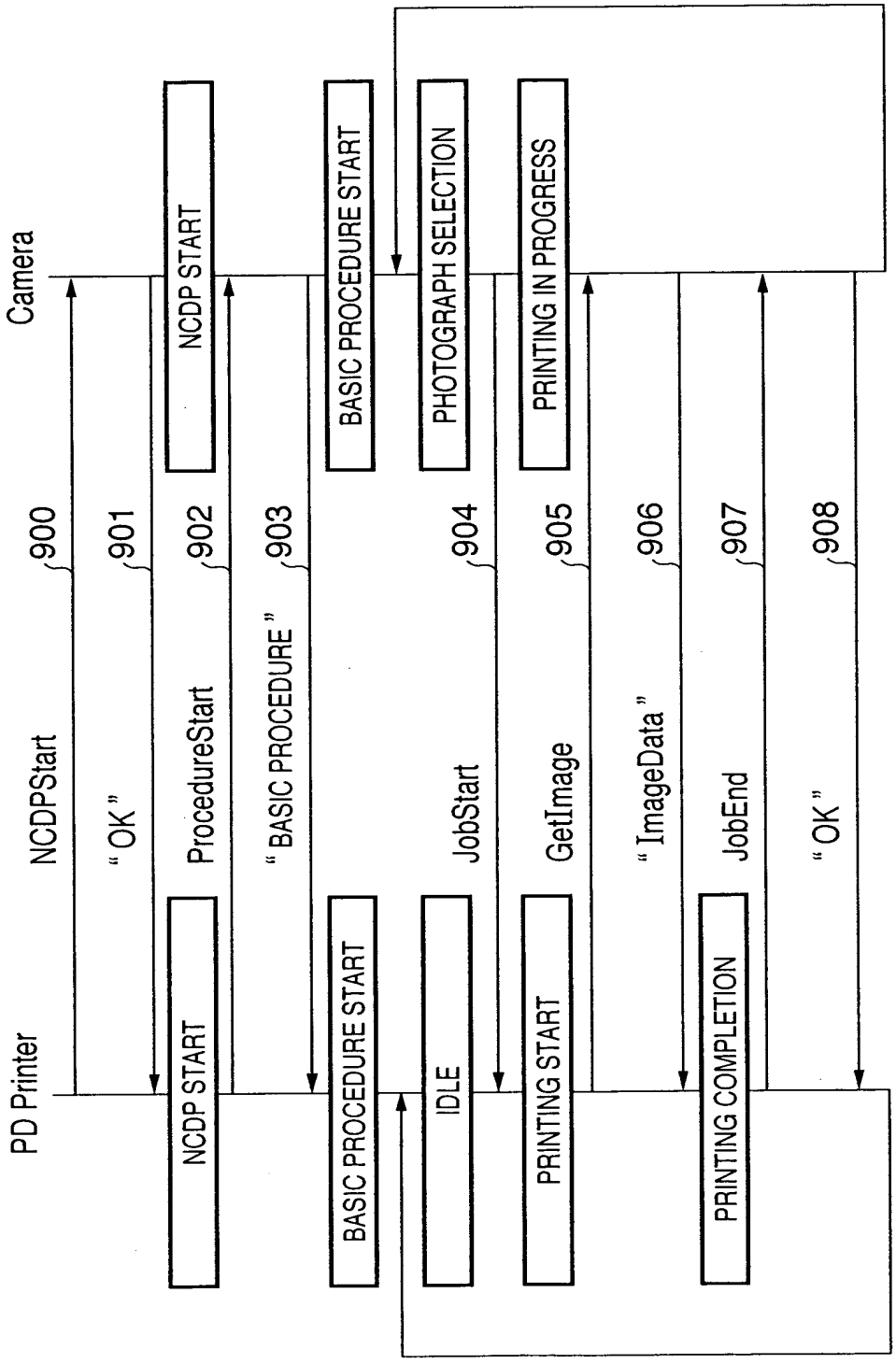

PD Printer
NCDPStart
"OK"
ProcedureStart
"BASIC PROCEDURE"
JobStart
GetImage
"ImageData"
JobEnd
"OK"
Camera
900
901
902
903
904
905
906
907
908
NCDP START
BASIC PROCEDURE START
IDLE
PRINTING START
PRINTING COMPLETION
NCDP START
BASIC PROCEDURE START
PHOTOGRAPH SELECTION
PRINTING IN PROGRESS

FIG. 10

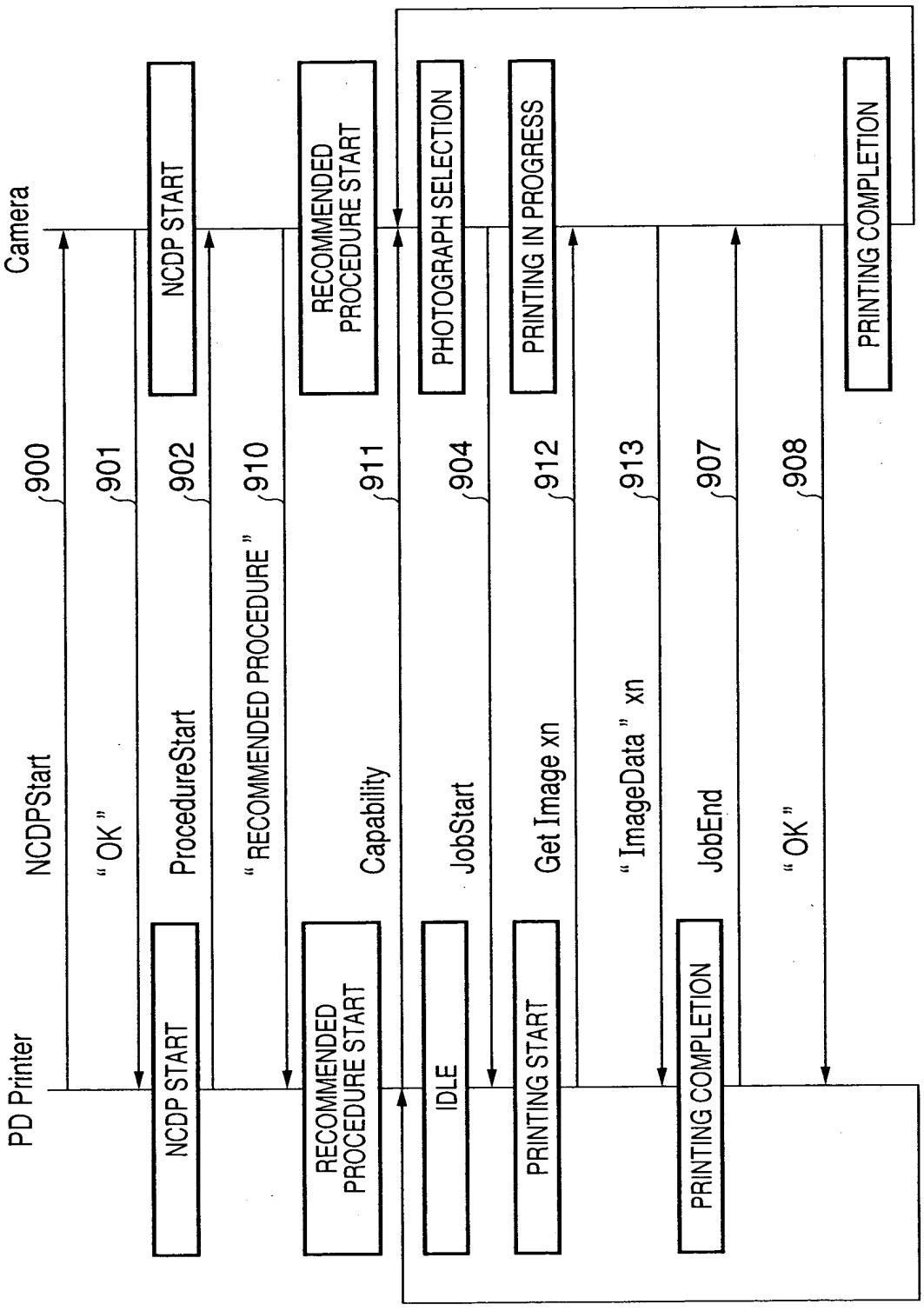

PD Printer
Camera
NCDPStart
900
"OK"
901
ProcedureStart
902
"RECOMMENDED PROCEDURE"
910
Capability
911
JobStart
904
Get Image xn
912
"ImageData" xn
913
JobEnd
907
"OK"
908
NCDP START
NCDP START
RECOMMENDED PROCEDURE START
RECOMMENDED PROCEDURE START
IDLE
PHOTOGRAPH SELECTION
PRINTING START
PRINTING IN PROGRESS
PRINTING COMPLETION
PRINTING COMPLETION

FIG. 11

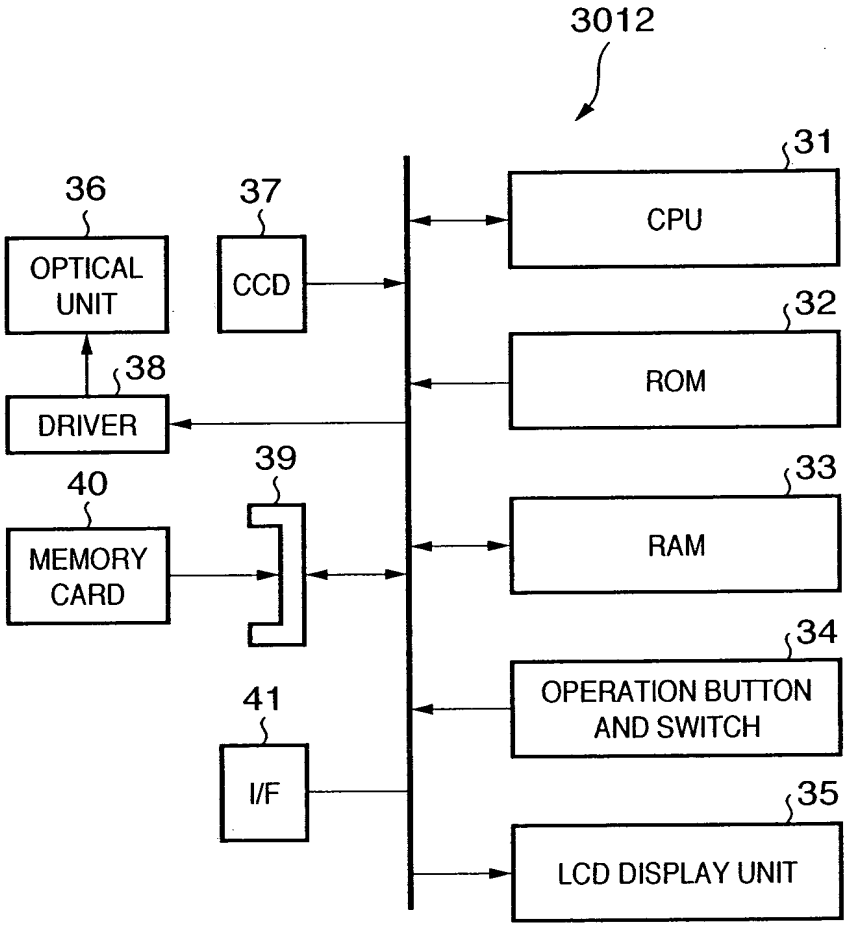

3012
31
CPU
32
ROM
33
RAM
34
OPERATION BUTTON AND SWITCH
35
LCD DISPLAY UNIT
36
OPTICAL UNIT
37
CCD
38
DRIVER
39
40
MEMORY CARD
41
I/F

FIG. 12

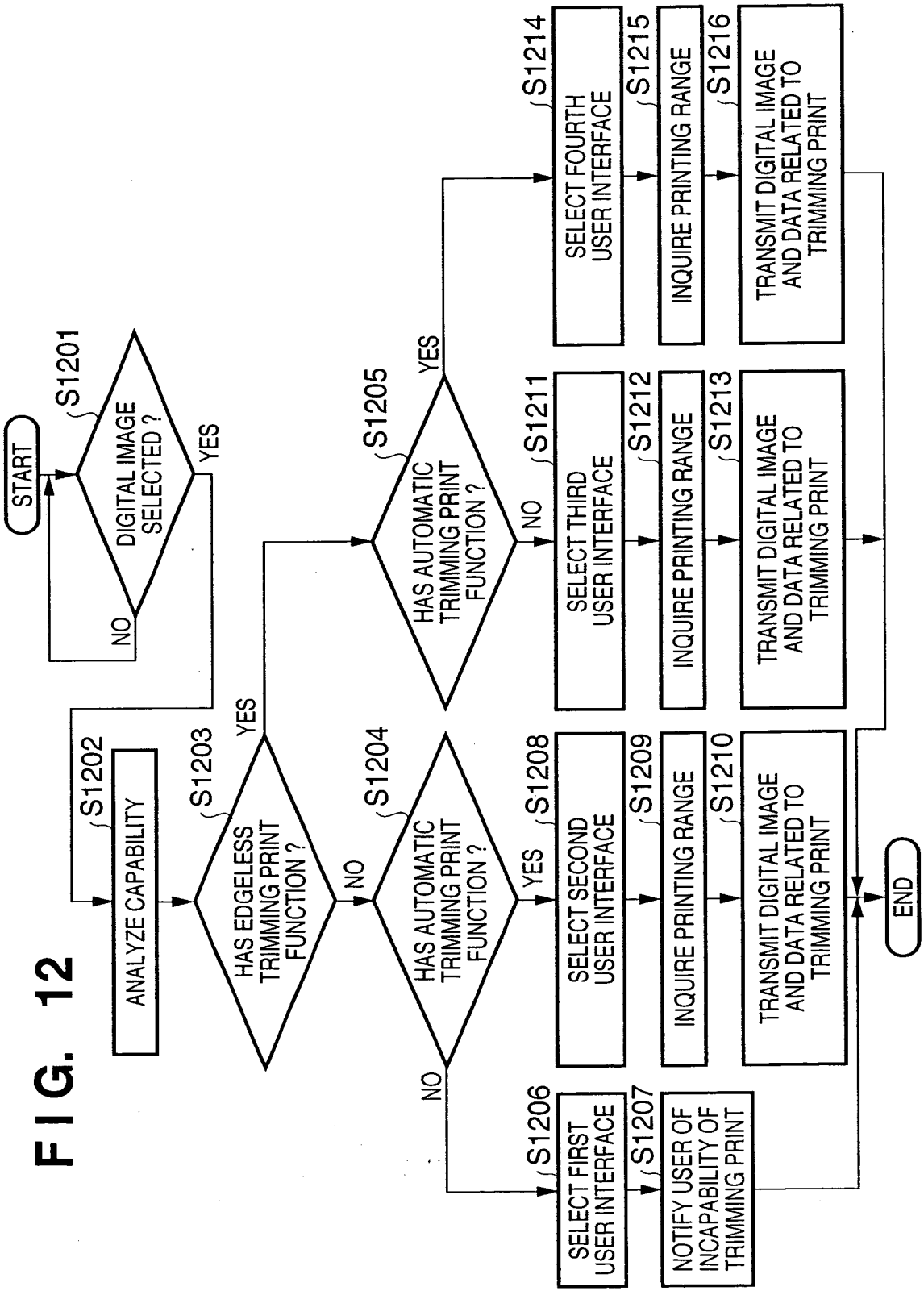
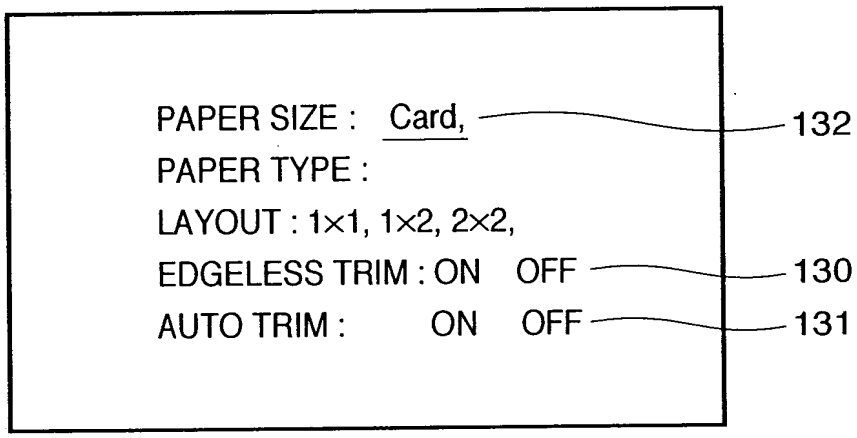

START
S1201
DIGITAL IMAGE SELECTED ?
NO
YES
S1202
ANALYZE CAPABILITY
S1203
HAS EDGELESS TRIMMING PRINT FUNCTION ?
YES
NO
S1204
HAS AUTOMATIC TRIMMING PRINT FUNCTION ?
YES
NO
S1205
HAS AUTOMATIC TRIMMING PRINT FUNCTION ?
YES
NO
S1206
SELECT FIRST USER INTERFACE
S1207
NOTIFY USER OF INCAPABILITY OF TRIMMING PRINT
S1208
SELECT SECOND USER INTERFACE
S1209
INQUIRE PRINTING RANGE
S1210
TRANSMIT DIGITAL IMAGE AND DATA RELATED TO TRIMMING PRINT
S1211
SELECT THIRD USER INTERFACE
S1212
INQUIRE PRINTING RANGE
S1213
TRANSMIT DIGITAL IMAGE AND DATA RELATED TO TRIMMING PRINT
S1214
SELECT FOURTH USER INTERFACE
S1215
INQUIRE PRINTING RANGE
S1216
TRANSMIT DIGITAL IMAGE AND DATA RELATED TO TRIMMING PRINT
END

FIG. 13


PAPER SIZE : Card,
132
PAPER TYPE :
LAYOUT : 1×1, 1×2, 2×2,
EDGELESS TRIM : ON OFF
130
AUTO TRIM : ON OFF
131